



IBExpert White Paper



Firebird White Paper

Software Performance Optimization

Holger Klemt, February 2018

You use self-written software for your own company or for your customers and wonder why processes take longer than planned?

The size of the database increases and individual sql command performance evaluations return very fast results. There must be a problem somewhere in the program flow, but even with familiar application debug techniques you can not really pinpoint the actual root of the cause.

The Remote Software Architect

IBExpert is specialized in offering our clients deep insight database and application analysis in order to find optimal performance advantages. We will find for you the critical performance areas and consult you with the recommended improvement ideas in order to get your application ready for large custom installations and data volumes to deliver optimal performance. This service is provided especially for Firebird database systems or applications written in Delphi/Lazarus/C++/C# or Java technology.

In case of a Firebird or Interbase database, we will review the executed SQL commands using IBExpert Monitoring and Trace API tools. Often these tools provide us already with clear hints like SQL commands are executed quickly but unnecessarily often or basic mechanism in the database have been ignored. Even at the network protocol level, we examine your application and when the debugger jumps from one line to the next, there is often a significant network traffic created that should be identified and corrected. Even a seemingly simply record count property should be considered with caution.

Missing indices are often the least problem. Often there are also commands found using MAX(), TRIM(), or UPPER() functions, but the programmer is not aware of it's negative effects. Incorrectly formulated join relationships often lead to a considerable additional effort for the database to return a simply result set. In the age of fast SSD's,



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the problem is hardly noticeable locally on the developer's machine, but in the network with 20 or 50 users, the impact can be immense.

Low CPU utilization does in first place pinpoint to a too slow data medium. But the performance problems are mostly in other areas. For example if a query runs isolated and creates 50GB read/write operations it could be the result of a faulty query or a too small set cache. But if you choose to set a too large cache, you can create significant disadvantages.

With special tools for Lazarus or Delphi, we make sure to localize not just database oriented operations that could slow down the application process. For example exaggerated Application.processMessages in loops or under performed retrieved data calls from TStringlist objects. Even invisible generated objects in complex multi page forms or seemingly trivial color runs on components have especially in terminal server applications negative impacts.

You will see that our 23 year experience in Delphi development and 8 year Lazarus can certainly teach you new aspects of how to rebuild and optimize your existing source code without rewriting the entire application. Optimal performance will allow your application to get utilized in large client projects.

In our IBExpert Firebird 3 Bootcamp we will provide insights in the above technologies and participants will be able to apply significant improvement to their own software solution.

If your time does not allow you to visit our IBExpert Firebird 3 Bootcamp, we offer a 12 hour remote education and project support by telephone and teamviewer/pcvisit/gotomeeting. The training takes place in 3 daily sessions of 4 hours each. The price for distance education is \$2450 USD.

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